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ABSTRACT

A number of recent reports note that colleges of education could do a better job in technology training. Most evident in these reports is the call for teachers to learn how to integrate technology into their instruction, rather than just learning technology skills in isolation. To heed recommendations and better respond to student needs, the University of Florida (Gainsville, Florida) in 1999 implemented a course designed for its secondary PROTEACH program called, "Integrating Technology into the Social Studies Classroom." Based on experiences from the course's first two years and relevant research and realities, the instructor formulated a framework by which to organize this particular course. The framework is described as Social Studies Content, Technical Skills, Assessment, Integration, Readiness, and Standards (STAIRS). A case study examined this course within the PROTEACH program. The course consisted of 15 preservice teachers with a wide range of technological expertise (for many students this was their first exposure to technology applied to classroom use). Data collection consisted of document analysis, observations, an instructor's journal, and interviews. A wide variety of student work contributed to the findings. Data analysis was conducted using the Dana and Silva's four steps for teacher inquirers: (1) description; (2) sense-making; (3) interpretation; and (4) implications. Findings suggest that overall, preservice teachers found this model to be extremely effective for preparing them to use technology in the social studies classroom. (Contains 30 references.) (BT)

Climbing the STAIRS: Preservice Social Studies Teachers' Perceptions of Technology Integration

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Introduction

In a recent study of two San Francisco area high schools, Cuban (2001) uses as an exemplar of technology use Alison Piro, an eleventh grade humanities teacher with five years in the classroom. When the reader is first introduced to Piro, one of her students is using an overhead projector as a spotlight to draw attention to a dramatic speech from Frederick Douglass. Even though this use of technology is fairly ordinary by most standards, Cuban contends that this episode showed the heart of her teaching, "dramatic, diligently planned, and even innovative in its use of technology" (p. 68). Piro regularly integrated various computer technologies into her classroom but recognized that technology was not always the best means by which to accomplish her objectives.

While Cuban recognizes several other teachers with similar attributes, he contends that these examples were exceptions in the classroom and not the norm. Despite having access to computers and other technologies, teachers in these two high schools generally clung to more traditional teacher-centered practices and did not attempt to enhance their teaching.

Similarly, *Education Week's* "Technology Counts" 1999 annual report (Trotter, 1999) focuses on the training of teachers to utilize technology in their classrooms and argues that as a whole, educators are not prepared to use computers for instruction. The section "Preparing Teachers for the Digital Age" effectively sums up the state of affairs for many educators:

> A school can have the best software ever made and access to the Web on every computer. But it won't see much difference in student learning, experts say, unless its teachers know how to use the digital content in their classrooms. (Preparing Teachers)

The report holds colleges of education partially responsible for not adequately training teachers to use technology in the classroom and forcing school districts to pick up a larger share of staff development than necessary.

A number of recent reports note that colleges of education could do a better job in technology training. (Milken Exchange on Education Technology, 1998; National Council for the Accreditation of Teacher Education: Task force on Technology and Teacher Education, 1997; President's Committee of Advisors on Science and Technology, 1997) With an already full slate of course offerings, most colleges of education have struggled to find ways not only to bring their instructors up to speed with advances in technology, but also to add more time for future teachers to use technology in meaningful ways. The most evident suggestions in these reports include more modeling of technology by instructors, as well as stronger and clearer technology standards by which to guide colleges of education, and more collaboration among colleges of education. But perhaps most evident in all of these reports is the call for teachers to learn how to integrate technology into their instruction rather than just learning technology skills in isolation.

The proclaimed need to integrate technology is particularly evident in the social studies. Social studies educators are becoming increasingly aware of the concerns expressed in the national reports, and more college methods professors have begun to write about their experiences integrating technology into their classes (Mason & Berson, 2000; White, 1997; Willis, 1997). Meyers (1999) adds that social studies educators must expose preservice teachers to technology "in as many different settings as possible, and must provide connections from the methods classroom to the practical setting" (p. 117). If

schools of education increasingly expose their students to technology in realistic settings, Meyers and others believe that the initial transition into teaching will be much smoother.

In order to gain greater understanding of the integration of technology in the social studies, Mason, Berson, Diem, Hicks, Lee, and Dralle (2000) have provided an excellent framework to guide social studies educators. The researchers' framework presents five guidelines/ principles that should direct technology infusion in teacher education programs:

- Extend learning beyond what can be done without technology.
- Introduce technology in context.
- Include opportunities for students to study relationships among science, technology, and society.
- Foster the development of the skills, knowledge, and participation needed by citizens in a democratic society.
- Contribute to the research and evaluation of social studies and technology.

While these authors say that following these five principles is the "minimal platform for the use of technology in the social studies," they argue that it is ultimately up to the individual instructor to truly reform social studies classrooms. But even though this training in technology should begin in teacher education programs, the authors maintain that it needs to continue throughout the professional life of the teacher if it is to make a real difference in social studies classrooms.

The STAIRS framework

In an effort to heed recommendations and better respond to student needs, the University of Florida in 1999 implemented a course designed for its secondary PROTEACH program entitled: "Integrating Technology into the Social Studies Classroom." Based on experiences from the first two years of the course, relevant research, and the realities of middle and high schools around Florida, the instructor formulated a

framework by which to organize this particular course. Throughout the semester, this framework helped to guide classroom activities, individual assignments, and student presentations. This framework can best be described with the acronym STAIRS:

Social Studies Content Technical Skills Assessment Integration Readiness Standards	

Students in this course completed a number of assignments throughout the course of the semester designed not only to improve their confidence with technical skills, but also to give them the ability to apply these through various social studies subjects beginning with history and moving into geography, economics, government, etc. Among the competencies students completed during the semester were activities involving word processing, web pages, PowerPoint, databases, spreadsheets, and web publishing. At the end of the course, students completed a "technology-rich lesson" that served as part of a larger unit required in their methods class. Many of these competencies, along with other activities, were not only appropriate for fulfilling course objectives, but also could be included in the electronic portfolio required for completion of the secondary PROTEACH program.

STAIRS in the literature

Social Studies Content

The National Council for the Social Studies (1994) describes social studies as a multidisciplinary study of many subjects including, but not limited to, anthropology, archaeology, economics, geography, history, law, philosophy, political science, psychology, religion, and sociology. In distinguishing the social studies from other disciplines, the organization emphasizes the unique nature of each of the disciplines that make up the social studies. For students, the argument is used that they should "begin to understand, appreciate, and apply knowledge, processes, and attitudes from academic disciplines" (p. 4). Using the NCSS Publication *Surfing Social Studies: The Internet Book* (1999) as a guide, the course focused on individual subject areas beginning with American history and then moving to world history, geography, American government, and other disciplines within the social studies.

Technical Skills

While students moved through the various content areas in the course, they also developed a number of technical skills including the creation of web pages, PowerPoint presentations, and databases. These skills were developed in accordance with ISTE's National Educational Technology Standards for Teachers (2000) that lists six categories for teachers wishing to use technology in their classrooms:

I. Technology Operations and Concepts
II. Planning and Designing Learning Environments and Experiences
III. Teaching, Learning, and Curriculum
IV. Assessment and Evaluation
V. Productivity and Professional Practice
VI. Social, Ethical, Legal, and Human Issues

While the first category may apply most directly to the skills learned in this class, each of the other areas had an important role in helping students apply these skills to the social studies curriculum.

Assessment

As was also discussed in the NETS Standards for Teachers (2000), students in the course were challenged to use technology in more student-centered ways and take an active, inquiry-based approach to learning. Since most preservice teachers in the class had only experienced traditional assessment strategies, the STAIRS framework emphasized authentic and alternative assessment strategies (Alleman & Brophy, 1998; Andrade, 2000; Nickell, 1999). As part of this approach to assessment, students were introduced to rubrics and created their own rubrics for several of the assignments in the course. In addition, the instructor provided additional support in understanding rubrics by using rubrics to grade technical competencies and other assignments. Consequently, these future teachers discussed the intricacies of grading technology assignments in a constructivist environment and compared these techniques with those of more conventional grading methods.

Integration

Integration refers to using technology as an essential part of the curriculum, not just as a supplement to existing teaching practices. Dias (1999) echoes the belief that technology is more than an add-on and argues that true integration takes place when "it is used in a seamless manner to support and extend curriculum objectives and to engage students in meaningful learning" (p. 11). In discussing the best means in which to integrate technology in the classroom, students in this course were introduced to the five

attributes of powerful social studies as proposed by the National Council for the Social Studies (1994): meaningful, integrative, value-based, challenging, and active. Rose and Fernlund (1997) apply these five characteristics to using technology in the social studies classroom, and reason that before using any technology-based product such as software, the Internet, or other multimedia source, teachers should ask if the use of technology fulfills these objectives.

Readiness

One of the major goals of this course was for students to be given ample opportunities to teach with the technologies that they were learning so that they would be ready to use technology in their future classrooms. One important component of this category was that the instructor would model appropriate use of technology throughout the course. Vannatta (2000) and others (Kinslow, Newcombe, & Goss, 2002; Meyers, 1999; White & Jensen, 1999) have noted the importance of having "technology-rich instruction" modeled for teachers in their training with technology (p. 11). While students were given numerous occasions to use technology to teach to their peers, many took the opportunity to try out technology in their practicum through such activities as PowerPoint lectures, Internet searches, and web page design.

Standards

A final piece of the framework that played a key role in the learning process was the importance of both social studies and technology standards. Preservice teachers examined both the NCSS Standards (1994) and Florida Sunshine State Standards (2002) in their methods class and used these standards to guide them through the creation of a thorough unit plan. In this course, students not only examined the content area standards,

but also explored the International Society for Technology in Education (ISTE) standards for both students (1998) and teachers (2000). In several assignments including the technology-rich lesson, they included the relevant ISTE standards for students along with state and national social studies standards.

Research Question

How did the preservice social studies teachers in this study perceive the usefulness of the STAIRS model in helping them learn how to integrate technology into their instruction?

Method

Setting and Participants

The setting of this case study was a course within the University of Florida's secondary PROTEACH program entitled "Integrating Technology into the Social Studies." Advocates of the case study approach (Merriam, 2001; Stake, 1995; Yin, 1994) argue that this method is appropriate when a contemporary phenomenon is being studied in a real setting. This course consisted of fifteen preservice teachers from a variety of backgrounds and with a wide range of technological expertise. Nonetheless, for many of these students, this was their first exposure to technology as applied to classroom use. The course took place in a computer lab with a master teaching unit and a networked computer for each student.

Data Sources

The collection of data consisted of document analysis, observations, an instructor's journal and interviews. A wide variety of student work contributed to the findings, including technical competencies, reflections on teaching, responses to online threaded

discussions, and class activities. In addition, the instructor maintained a journal of classroom observations not only to describe class activities, but also to expand on larger themes in the class environment. Finally, at the end of the semester interviews were conducted with selected students closely representative of each of Rogers' (1995) five categories of individuals adopting innovations (true innovators, early adopters, early majority, late majority, and laggards).

Data Analysis

Data analysis was conducted following Dana and Silva's (2003) four steps for teacher inquirers. First of all, we read through all of the interviews, documents, journals, and bulletin boards in order to form a detailed *description* of the class and the various components of the inquiry. Second, we began to ask deeper questions about our data and began the *sense-making* process in which we developed a number of categories that fit patterns in the study. In this step, the instructor's journal was particularly helpful for exploring themes and patterns. Next, based on our major categories, we undertook an *interpretation* of the data that showed more directly how the participants viewed the various components of the STAIRS model and the class as a whole. Finally, we looked at the *implications* of our study and how social studies educators might be able to use this model in practice. These implications were condensed and included in a separate section at the end of this paper.

Findings

Social Studies Content

Overall, preservice teachers found this model to be extremely effective for preparing them to use technology in the social studies classroom. In initial reflections for

the class, they commented on their confidence with social studies and their confidence with technology. While their confidence with technology was not strong, their content area appreciation was apparent in their responses. All fifteen students in the class expressed a real desire to use the knowledge they had gained as history majors, and with the exception of economics, most of them said that they could teach any other area of the social studies as well. One student noted, "All together, I feel most confident with my knowledge of historical content but feel it is important to be flexible and know that if I had to teach the other subjects, I most certainly could."

The first threaded discussion that students participated in asked what social studies content area was best suited for technology. Several students said that most social studies subjects had a strong technological component, but most felt that history was the area best represented through technology. One student took the question to an extreme and responded, "The field of history is truly blessed by the advent of the technological classroom. It allows us to share our research, expand our learning, and broaden our horizons." He added that because most of his fellow students were history majors, it might just be the most important area because it is so many people's "true passion."

Because most of the preservice teachers were undergraduate history majors, they appreciated the exposure to other subject areas. One interviewee added,

> I don't know if it would have made a difference in my learning, but it forced me to not just do history. It forced me to do sociology, to do economics, geography. But otherwise I would have stuck to just World and American History because those are the subjects that I was the most familiar with.

While students were able to examine any topic area they desired on several assignments such as a significant links page and the final technology-rich lesson, the overall focus on a variety of social studies content areas was well received by the class. Several of the

interviewees said that because the content was interwoven into the technical skills in most cases, they really didn't notice it in their overall impression of the class.

Technical Skills

When asked on an initial questionnaire to rate their own ability with technology from beginner to expert, most of the students in this class indicated that they were fairly hesitant about using technology. While five teachers rated themselves as intermediate users, six rated themselves novices with technology and four beginners. Most of them had exposure to word processing, but most had little to no experience with PowerPoint, web pages, spreadsheets, or any of the other competencies to be mastered in the course.

While students grew in their proficiency with technology skills, they also expressed a lot of frustration along the way. One student who had limited technology skills at the beginning of the class had an interesting experience during a class activity on spreadsheets at the beginning of the semester. For some reason, every time she tried to type a "y," a "z" appeared on the keyboard and vice versa. After 10-15 minutes of frustration, she announced to the class that "the computer gods are out to get me" and stopped trying to work. Even with this initial trepidation, she noted on her final reflection that "Except for that "y's" making "z's" and "z's" making "y's" fiasco, I learned a great deal and can now work with computers with some level of competency."

When students were asked to reflect at the end of the course on their confidence with technology, technical skills were brought to the forefront. While several students mentioned that they could now evaluate resources more effectively or come up with more authentic assessments, the skills were the areas most frequently cited. In the final interviews, several of these future teachers mentioned their excitement about learning to

integrate databases, web publishing, and search strategies into their social studies instruction, they felt most proud of discovering how to create web pages during the course of the semester. When asked in what area of technology they had grown the most, all of the interviewees quickly said web pages. A typical sentiment came from one individual who boasted, "Undoubtedly web programming, making web pages. Between doing the competencies for the class and playing with it on my own, I feel pretty confident now." Several students even took the initiative to design web pages for their student teaching in the spring semester and incorporated skills learned during the class into these class sites.

Assessment

While assessment was not emphasized as much as content or technical skills in the class, students still perceived that assessment was an important part of learning how to use technology. When discussing how to best assess student learning through technology, these preservice teachers generally felt that while technology skills were important for their students to possess, they would place a greater emphasis on social studies content. Many also felt that technology projects provided a viable alternative to traditional means of evaluation. In a threaded discussion concerning the role of the teacher in integrating technology, one participant in the conversation argued, "I would much rather assess a project where my students' creativity and individuality is evidently displayed than grade a five-page paper that essentially regurgitates the encyclopedia." Many preservice teachers also noted that even though assignments using technology would be harder to assess than traditional tests and quizzes, they were still willing to put forth the effort to evaluate more resourceful student work.

The final technical competency for the class was the creation of a travel brochure with a partner, which carried with it a short reflection commenting on how to best grade this type of assignment. Most students said that accuracy in content information would be the most important attribute they would look for in a project, but most groups also mentioned neatness, grammar, creativity, and organization as being important in seeing what students had done. Some reflections even included a detailed rubric by which to grade students on the brochure. Overall, students saw assessment as a logical extension of using technology to teach the content and saw this as an important part of what their role would be as teacher.

Integration

In the process of learning how to integrate technology seamlessly into social studies lessons, these preservice teachers clearly understood that technology should not permeate all aspects of every lesson. A notable response from a threaded discussion supported this point and added, "I think that teachers should integrate technology into their lesson, not let the technology rule their lesson." While the competencies may have forced students to use technology in ways that might not seem natural or comfortable, it did push students to think about technology's role in the social studies curriculum.

In planning a technology-rich lesson for this course as part of a larger unit plan, the preservice teachers experienced the difficulties of trying to make technology fit into a larger design, and still meet other curricular needs. This technology-rich lesson also served as a model in integration because students had to develop it in coordination with their social studies methods class and in the course associated with their teaching practicum.

Responses from the final interviews showed a mixed reaction towards integrating technology into a social studies unit or lesson. One respondent argued that the process seemed artificial and added,

> It seems to be, well we have to have a technology lesson, so how can we squeeze one in here somehow, how can we do this with technology? ...My experience is that it tends to be sort of forced. It tends to be, well we have to do a web page to do what we could do just by talking about it for five minutes.

This student concluded that integrating technology in a forced way was not only ineffective, but also wasteful of class time that could be used doing other meaningful activities.

Others felt more positively towards integrating technology into social studies classes. These students emphasized such positives as technology's ability to engage students in learning, and the Internet's vast resources in helping students to find valuable information. One student even said "right now there's almost always some technology in every lesson that I do" and that it helped to develop routines in her classes.

One difficulty that surfaced in all of the interviews in integrating technology was the disparity between the technology available at the university and the technology available in the area public schools. While having individual networked computers, a projection unit, and laser printers provided an excellent atmosphere in which to teach, it did not conform to what students saw in their practicum experiences during the same semester. Nevertheless, most of these students recognized the necessity to prepare themselves as much as possible to use the technology available to them. In one threaded discussion, one student asserted,

> We cannot ever stop being students of technology ourselves. One day the school systems will catch up and we will be able to use our knowledge of technology.

> But there are advancements being made everyday, and we must continue to educate ourselves so that the schools and the students do not pass us by.

In the past five to ten years, schools have grown in technology availability by leaps and bounds, and it was important to provide preservice teachers with experiences that would show them not only where technology in the schools were at that time, but also where they could go in the future in integration it into their social studies classes.

Readiness

Initial reflections completed during the first week of the course expressed much trepidation at actually using technology in the classroom. While most said they felt confident standing in front of a group of adolescents, fewer said that they could use technology in such situations. One student even remarked that the only technology she needed was "an overhead projector, a TV/VCR combo, and maybe a record player." This sentiment was consistent among the students and as their comfort levels with technology increased with technology throughout the course, they were given more opportunities to use technology in front of their peers.

While using technology in front of a class of peers was one thing, classroom experiences during the fall semester allowed students the opportunity to use technology with real students and see how they would react. Each student spent three weeks in a middle school social studies classroom and the same time in a high school class, and in many cases, used technology in these experiences. One preservice teacher, who initially said that she was very confident with technology, later remarked on how much she had learned in her middle school practicum:

> During my practicum experiences, I have had several opportunities to utilize technology. For the first practicum, I created a web-based activity about Mexico that the students spent three days on. They enjoyed it and were able to learn about

> Mexico for themselves. (Before taking this class I might have been compelled to show a video about Mexico.) I had a couple of reality checks when working with the web activity, however. I had some students who didn't know how to navigate a web site. I had others who couldn't go back in the browser. I also had several computers freeze while the students were on them and still others not loading the web pages. These events helped me overcome my fear of using technology in the classroom. They showed me that things can go wrong, and you've got to just go with what you have. I have always had a difficult time changing my plans around, but these experiences are helping me overcome my inflexibilities.

While teaching to one's peers can provide some useful practice for developing pedagogical skills, as Meyers (1999) contended, the real learning comes when working with a classroom of students, and most of the preservice teachers in the class were able to get some opportunities to teach with technology.

Standards

The final piece of the STAIRS framework, Standards, was the area that seemed to be lacking in terms of the overall impact of the course. While preservice teachers learned about the International Society of Technology in Education (1998) standards for students and related them to their technology rich lessons, they generally felt that NCSS and Florida Sunshine State Standards were more important to them in their teaching than technology standards. One interviewee categorized the ISTE standards as "a little bit broad and a little bit bland" and added that they had little impact on his approach to lesson planning. Most students in the course saw the social studies standards emphasized in their methods class, and more importantly, in the schools they were observing, but technology standards rarely came into play.

A major concern for these students related to technology and standards was time. While the preservice teachers generally wanted to integrate technology into their teaching,

many expressed concerns that the state mandated curriculum might restrict possible applications. One student recognized this problem and contended,

> I think the only way that standards might affect my students is with time constraints. Like if I'm trying to get through the Revolutionary War by next week, in four days and they have a quiz. I'm not going to be able to do this great WebQuest activity because it takes too much time. That's the only thing I see with standards is that if we have to do these things like trying to get to WWII by the end of the year, you're not going to be able to spend two or three days doing a WebQuest on the Revolutionary War or have some leeway with what I am supposed to cover.

Another student related similarly,

> As far as social studies time is concerned, if time is cut, you will not be able to use as much technology. You are going to have to get X amount of information out to meet our standards and not worry about technology. It could also be a nice break for students, apart from the drills they would be doing for FCAT.

Even among those students who were more proficient with technology, most realized that creating innovative lessons takes time and even though they had not begun to teach, they recognized the time pressures that were put on educators. Collectively, these students acknowledged the importance of standards in the social studies classrooms, but many did not see how technology could fit into their notion of the social studies classroom.

Overall

When asked to respond to the class as a whole, students generally found that the model prepared them well for the challenges they would encounter in the classroom. One interviewee shared her appreciation that the course was not just an exercise in computer savvy and added, "It taught me how to use technology in the classroom. Had it been just showing me how to use a word processor, I would have been disappointed, but it did show me as a teacher, how I could use it effectively."

Final reflections that students wrote as part of their final examination also carried an attitude of appreciation for the knowledge gained during the course. Much of this sentiment was based around the technical competencies. One student who began the course with limited technology background expressed his progress in using technology:

> I stated in the original reflection that the technological devices I had a real confidence in using were the TV and VCR. I can now say that things have changed for me. My confidence has improved tenfold since I wrote that original reflection back in September. I always knew that I wanted to use technology to improve my lessons and to motivate my students to learn, but before I took this class I didn't have the know how to accomplish that goal.

Among the skills listed as being most valuable for these future social studies teachers were Internet searching skills, web pages and PowerPoint.

But in these same reflections, students also indicated that they learned much more than simply skills in the class that would serve them well as future social studies teachers. Two themes emerged from these responses that have a direct impact on how students perceived the STAIRS model as a whole. First, many of them noted that using technology involves a great deal of flexibility on the part of the teacher. In talking about her initial attempts at using technology, one student related the following recommendation:

> First of all, as a teacher, I should be trained to be flexible. If everything goes right all the time in the classroom, the first time anything went wrong, it might put me in a tailspin. But, if things fail every once in a while, I'll be able to hone the skill of flexibility. Second, having my students see the teacher fail and something will cultivate the attitude within my classroom that failing at something is OK. If we want our lessons to be meaningful and have every student participate and voice their opinion, then we must have a classroom that is very tolerant. When the teacher fails, laughs it off, and tries something else the students will see that failing at one thing is simply an obstacle to be overcome on the way to a goal.

Several students related experiences from their university classes and from their practicum experiences where technology did not work as expected, and they needed to have a backup

plan. While some were well prepared, others learned the hard way about what happens when technology does not work.

A second theme that came out of the final reflections was that learning about technology was going to be an ongoing challenge that they would have to continually refine during their professional careers. Several preservice teachers discussed the necessity of being lifelong learners, always looking for ways to engage their students. One student noted that the approach many teachers take to technology trying to learn everything they could at once was ineffective and advocated taking "baby steps" in order to feel more comfortable about using it in the classroom. Another student similarly noted that he did not want to be the "dinosaur teacher" in regard to technology use and said that "thanks to this class I have a foundation that is solid enough that I don't think that I will ever have to worry about that problem."

Implications and Recommendations for Future Study

One of the most difficult issues in trying to develop any sort of course that involves technology is dealing with the different levels of technical competence among students. Some of the students in the class had already taken technology classes in their undergraduate careers, while others came into the program with little to no technical expertise. An important question that we asked students early in the term was to assess their confidence using technology. One of the most important attributes of this model is that it is rooted in the content area and the technology flows out of that content base. Students are able to move together through the integration process and those more technologically able students were able to bring those novice technology users along at a greater speed than if the technology had been taught in isolation.

One of the critical components for teacher education programs advocating technology use is the modeling of effective instruction. One response in a threaded discussion clearly brought out this position:

> The teacher as facilitator is one of the themes that we see over and over in this program and when considering technology, our vision should be no different. If we expect our students to communicate through a new medium such as technology, the most effective way to teach them is to use the resources ourselves. Modeling is the best way to show students just how important technology is.

In their final reflections, preservice teachers noted an eagerness and excitement about using technology in their future classrooms, but at the same time, they acknowledged that keeping up with the latest technology innovations would require a constant commitment.

While this study provides an important glimpse into how preservice teachers view technology integration in the social studies, much more remains to be learned about this ongoing process. Following these preservice teachers into their initial years of teaching is an important first step to see how effective this model will be in serving the needs of these students. Doppen (2002) has begun this area of study with a case study of four first-year history teachers, but much more needs to be done to understand the choices beginning social studies teachers make in regard to technology use.

It is also important to recognize that this approach is only one model that was found to be effective in a particular setting. Other models of technology integration may prove to be useful in different settings, and we would encourage similar studies of preservice teachers emphasizing different parts of our model, or comparing it to different models all together.

A final area that also deserves additional attention is the need for an entire course based on integrating technology into a specific content area. Some schools of education include a technology class in their program, but with a focus on technical skills and not grounded in the content area. Most programs are moving to an integrated approach in which technology is integrated into various parts of an entire program. In many of these programs, students are able to demonstrate what they have learned in the program through an electronic portfolio or similar demonstration of technical and pedagogical competence. But the biggest concern in such programs is that many professors do not include technology in their classes and that students do not have models from which to base their teaching. Deciding which of these approaches is best for preservice social studies teachers should be a significant area for future research.

Conclusion

When asked about his overall experience in learning about integrating technology into the social studies classroom, one of the interviewees referred to two questions that were at the heart of this course. When faced with the decision of whether or not to use technology in a particular situation, Judi Harris (1998) states that two questions should guide this significant decision:

> *1) Will this use of technology enable us to do something we couldn't do before?*
> *2) Will this use of technology enable us to do things better than we could do before?*

While the STAIRS framework provides a solid foundation on which to build technology integration for preservice teachers, it does not hold all of the answers for when and how to best use it in the classroom. Our discussion of the STAIRS framework demonstrates that the process of reaching towards technology integration is difficult and requires

collaboration and cooperation. It is an uphill battle, and teachers require constant support with each step they take if they are to achieve their goals for meaningful integration. We hope that this framework will not only encourage preservice social studies teachers to reach these goals for technology integration, but also challenge social studies educators to reflect critically on the role technology plays in their instruction and in their education programs as a whole.

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